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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/560,475	06/05/2006	Dirk Muhlhoff	3081.150US01	3180
24113 7590 05/12/2009 PATTERSON, THUENTE, SKAAR & CHRISTENSEN, P.A. 4800 IDS CENTER 80 SOUTH 8TH STREET MINNEAPOLIS, MN 55402-2100				
EXAMINER				
GREECE, JAMES R				
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2873				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/560,475

**Applicant(s)**

MUHLHOFF ET AL.

**Examiner**

JAMES R. GREECE

**Art Unit**

2873

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 January 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-17 and 35-52 is/are pending in the application.
- 4a) Of the above claim(s) 35-52 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 12/12/2005 & 9/23/2008
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Election/Restrictions***

Claims 35-52 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicant's election with traverse of claims 1-17 in the reply filed on 1/14/2009 is acknowledged. The traversal is on the ground(s) that the restriction does not set forth a case for serious burden on the examiner. This is not found persuasive because the examiner clearly sets forth arguments for a burdensome search on page 4 of the restriction requirement which the applicant does not argue. Further the applicant cites US Patent law however the application should be considered under PCT rules due to the application's status.

The requirement is still deemed proper and is therefore made FINAL.

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.  
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.  
(c) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 3-14, and 16 are rejected under 35 U.S.C. 102(a,c) as being anticipated by Shimmick (USPUB 2004/0021874 A1).

Re claim 1, Shimmick teaches a device for determining a movement of an eye, comprising an illumination unit, which generates optical radiation during operation and emits it as an illumination ray bundle for illumination of at least one region on the cornea of the eye (see at least numeral 9); a distance-determining unit, which senses, in a temporally resolved manner, the illumination ray bundle returned by the cornea as a detection ray bundle and generates a distance signal using the received optical radiation of the detection ray bundle, said signal corresponding to a distance of the cornea from a reference plane, which is defined relative to the distance- determining unit (see at least paragraph 0021); and an evaluating unit which, using said distance signal, generates a position or movement signal corresponding to a position or movement of the eye (see at least numeral 22).

Re claim 3, Shimmick teaches wherein the distance-determining unit comprises an interferometer portion which, together with the cornea, forms an interferometer during operation (see at least paragraph 0052).

Re claim 4, Shimmick teaches wherein the illumination unit is provided to emit optical radiation having a predetermined temporal coherence length (see at least numeral 102), the interferometer portion comprises at least one beam splitter arranged in the path of the illumination ray bundle so as to form a reference ray bundle from the optical radiation of the illumination unit (see at least numeral 118), at least one optical functional element for superimposing the detection ray bundle onto the reference ray bundle (see at least numeral 118), and a unit for varying the optical path length of the reference ray bundle between the beam splitter and the optical functional element or the optical path length of the path of the illumination ray bundle after the beam splitter and/or between the spot illuminated by the

illumination ray bundle on the cornea and the optical functional element (see at least numeral 230), and the distance-determining unit comprises a detection unit, which suitably senses the intensity of the superimposed reference and detection ray bundles and transforms them into a distance signal (see at least numerals 106, 108, and 22).

Re claim 5, Shimmick teaches wherein the unit for varying the optical path length comprises a reflector which is movable back and forth in a substantially linear manner (see at least numeral 230).

Re claim 6, Shimmick teaches wherein the unit for varying the optical path length comprises a reflector arrangement (see at least numeral 30), which is rotatable or pivotable about an axis, said reflector arrangement comprising a plurality of reflecting portions each located a different distance from the axis (see at least numeral 30).

Re claim 7, Shimmick teaches further comprising illumination optics for focusing the illumination ray bundle for at least one wavelength in a predetermined range of possible positions of the cornea (see at least numerals 102, 110, 112, and 114) and wherein the distance-determining unit in a detection beam path comprises detection optics (see at least numeral 108), a small-aperture stop arranged following said detection optics and located in a stop plane (see at least numeral 0047), and a detection unit arranged following said aperture stop for detecting the optical radiation behind the small-aperture stop, wherein the stop plane is conjugated with an object plane associated with the wavelength, said object plane being located in a range of possible positions of the cornea (see at least numeral 0047).

Re claim 8, Shimmick teaches wherein the position of the illumination and/or detection optics and/or of the aperture stop and/or the focal length of the illumination and/or detection

optics and/or the position of the illuminated spot can be changed by means of a drive (see at least paragraph 0048).

Re claim 9, Shimmick teaches wherein optical radiation of different wavelengths can be emitted by the illumination unit, and ray bundle forming optics of the illumination unit, the illumination optics and/or the detection optics are dispersive (see at least paragraphs 0043-0044).

Re claim 10, Shimmick teaches wherein the illumination unit is adapted for emitting optical radiation in at least two different spectral ranges (for details see at least paragraph 0051).

Re claim 11, Shimmick teaches wherein the illumination unit comprises a source of radiation for emitting optical radiation in a predetermined spectral range (see at least paragraph 0051).

Re claim 12, Shimmick teaches wherein the detection unit is positioned for spectrally and temporally resolved detection of the optical radiation behind the small-aperture stop (see at least numeral 108).

Re claim 13, Shimmick teaches wherein the detection unit is adapted for detection of the optical radiation behind the small-aperture stop in a manner timed with the change of the spectral ranges of the illumination ray bundles (see at least numeral 22 and paragraphs 0051 and 0053).

Re claim 14, Shimmick teaches wherein the illumination optics and the detection optics comprise a common objective (see at least figure 6).

Re claim 15, Shimmick teaches wherein the common objective has a predetermined longitudinal chromatic aberration (see at least figure 6).

Re claim 16, Shimmick teaches comprising at least one illumination unit (see at least 0051), which emits two illumination ray bundles and which illuminates two different areas on

the cornea of the eye (see at least paragraph 0011), and comprising at least one distance-determining unit (see at least numeral 22), which receives, in a temporally resolved manner, detection ray bundles reflected by said two areas on the cornea and generates distance signals corresponding to distances of the cornea from two reference planes (see at least paragraphs 0011 and 0085), said reference planes each being defined for one of the detection ray bundles relative to the distance-determining unit and the evaluating unit evaluating the distance signals and generating position or movement signals which correspond to a position or movement of the eye in two spatial directions (see at least paragraph 0011).

3. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Takagi et al (USPAT 5,682,224).

Re claim 1, Takagi et al teach comprising an illumination unit, which generates optical radiation during operation and emits it as an illumination ray bundle for illumination of at least one region on the cornea of the eye (see at least numeral 30);

a distance-determining unit, which senses, in a temporally resolved manner, the illumination ray bundle returned by the cornea as a detection ray bundle and generates a distance signal using the received optical radiation of the detection ray bundle, said signal corresponding to a distance of the cornea from a reference plane, which is defined relative to the distance-determining unit (see at least numeral 40); and

an evaluating unit which, using said distance signal, generates a position or movement signal corresponding to a position or movement of the eye (see at least col. 3, lines 4-9 and col. 4, lines 4-7).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 2 and 17 are under 35 U.S.C. 103(a) as being unpatentable over Shimmick (USPUB 2004/0021874 A1).

In regard to claim 2, Shimmick does not explicitly teach wherein the illumination unit is provided such that a diameter of the illumination ray bundle on the cornea of the eye arranged in front of the device is between 2  $\mu\text{m}$  and 20  $\mu\text{m}$  during operation.

However the examiner takes official notice to the fact that changing the width/size of a beam of light would be an obvious alteration to any light casting device to one having ordinary skill in the art at the time the invention was made. This would provide the predictable result of an efficient device lighting only the area necessary for the function of the device.



Re claim 17 Shimmick teaches comprising at least one illumination unit (see at least 0051), which emits three illumination ray bundles (see at least 0011), which illuminate three different areas (see at least 0011), and comprising at least one distance-determining unit, which receives, in a temporally resolved manner, detection ray bundles reflected by said three areas on the cornea and generates distance signals corresponding to distances of the cornea from three reference planes (see at least 0011 and 0085), said reference planes each being defined for one of the detection ray bundles relative to the distance-determining unit and the evaluating unit evaluating the distance signals and generating position or movement signals which correspond to a position or movement of the eye in three spatial directions (see at least 0011).

In regard to claim 17 Shimmick does not explicitly teach forming the corners of a triangle on the cornea of the eye.

However the text of the Shimmick reference does teach multiple (more than two) locations and as there are only three possible shapes that can be represented by three light spots (point/circle, line, and triangle), it would be obvious to try each of these configurations in order to get the optimal measurement. The triangle configuration would provide the best set of measurements to represent all portions of the cornea since the line would provide only a cross section and a dot would only provide a point measurement.

7. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takagi et al (USPAT 5,682,224).

In regard to claim 2, Takagi et al does not explicitly teach wherein the illumination unit is provided such that a diameter of the illumination ray bundle on the cornea of the eye arranged in front of the device is between 2  $\mu\text{m}$  and 20  $\mu\text{m}$  during operation.

However the examiner takes official notice to the fact that changing the width/size of a beam of light would be an obvious alteration to any light casting device to one having ordinary skill in the art at the time the invention was made. This would provide the predictable result of an efficient device lighting only the area necessary for the function of the device.

#### ***Cited Prior Art***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a. Waelti (US 6,755,819 B1) is cited to show an ophthalmologic device/method in the art.
- b. Fercher (USPAT 5,847,827) is cited to show an ophthalmologic device/method in the art.
- c. Shimmick (PGPUB 2006/0206102) is cited to show an ophthalmologic device/method in the art.

#### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAMES R. GREECE whose telephone number is (571)272-3711. The examiner can normally be reached on M-Th 7:30-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Mack can be reached on 571-272-2333. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. R. G./  
James R Greece  
Examiner, Art Unit 2873  
5/8/2009

/Ricky L. Mack/  
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